

High-Capacity, High-Speed, Solid-State Hydrogen Gas Generator, Phase I

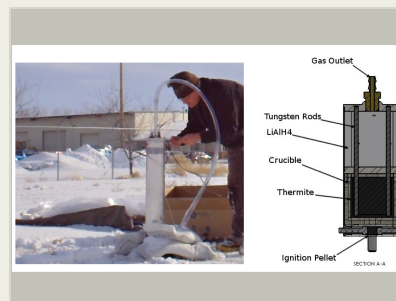
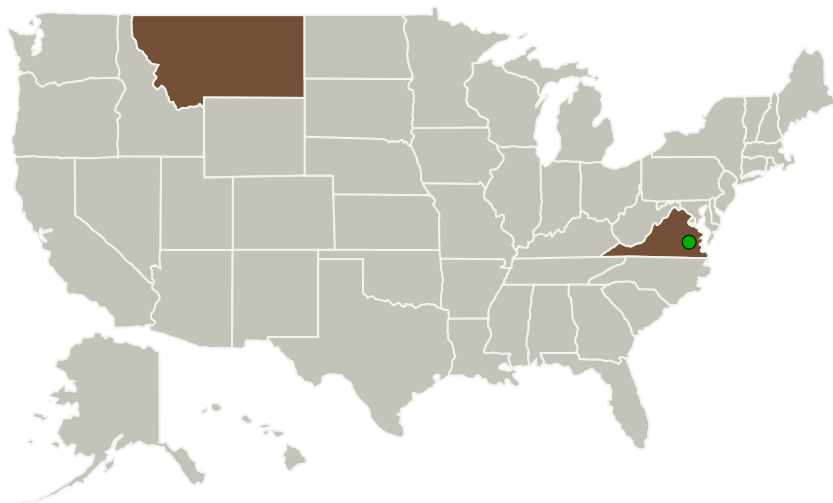
Completed Technology Project (2017 - 2017)



Project Introduction

Deployable aerodynamic decelerators are an enabling technology for missions to planets and moons with atmospheres as well as for returning payloads to Earth. These decelerators require a gas source to inflate them, and the objective is to provide an improvement over existing pressurized cold gas inflation systems. A solid-state hydrogen gas generator is proposed which is based on the thermal decomposition of a metal hydride in a controlled manner. Anasphere has successfully demonstrated this technology in Air Force and DARPA projects. Volume and flow specifications for the DARPA generator were within a factor of 10 of what is required for a Phase II demonstration. Advances to be demonstrated in Phase I relate to adapting the generator technology for space operation and optimizing the system from a mass perspective. Phase I work will include thermal reservoir design and optimization for the space environment, gas generation vessel design and optimization for the space environment, heat transfer optimization, physical testing of subscale elements followed by subscale generator testing, and finally the completion of scaled-up designs.

Primary U.S. Work Locations and Key Partners



High-Capacity, High-Speed, Solid-State Hydrogen Gas Generator, Phase I Briefing Chart Image

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Organizations Performing Work	Role	Type	Location
Anasphere, Inc.	Lead Organization	Industry	Belgrade, Montana
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations

Montana	Virginia
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Images



Briefing Chart Image

High-Capacity, High-Speed, Solid-State Hydrogen Gas Generator, Phase I Briefing Chart Image
(<https://techport.nasa.gov/image/125923>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Anasphere, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

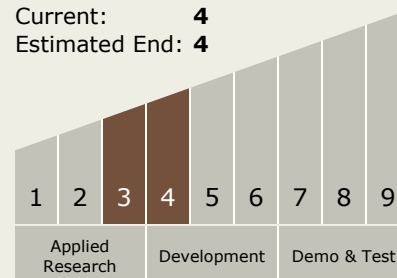
Carlos Torrez

Principal Investigator:

John A Bognar

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
 - └ TX09.1 Aeroassist and Atmospheric Entry
 - └ TX09.1.2 Hypersonic Decelerators